

A Proposal for HLW Disposal

18 Jan 2011

To: Blue Ribbon Committee on America's Nuclear Future; Disposal Subcommittee:

I am submitting this proposal for consideration by the BRC. First a brief introduction. I have over 40 years experience in nuclear related fields. My initial experience was in safety analysis and risk assessment for commercial nuclear power reactors. After the Chernobyl accident, I became involved in probabilistic risk assessments for DOE research, test, and production reactors. Most recently, I was involved in the Yucca Mountain HLW Disposal Project, being responsible for repository preclosure accident analysis and also providing assistance in transportation risks and on-site dry storage accident analysis for the no-action alternative for the YMP EIS. I also was a consultant to the YMP prime contractor assisting in safety and risk assessment for repository operations. I started my career with the Atomic Energy Commission, then worked for a large government contractor at INEL, then a small consulting firm and finally as an individual consultant (for the past 20 yrs).

My proposal is simple and not original in concept, although some of the details may be unique. First though, I want to express opposition to geologic disposal. I think, at least as proposed at YMP, it is excessively expensive and complex and not necessary for protection of the public. It poses problems for monitoring and retrieval, imposes difficult issues in evaluating the impact of natural events (seismic and volcanic) and corrosion, and presents onerous problems in demonstrating compliance with (in my opinion) the unreasonable EPA off-site dose requirements.

I believe that above ground dry disposal is the best solution. In my proposal, the dry disposal modules would be essentially the same as the concrete/steel design currently licensed by the NRC for storage at nuclear power plants. There would be a single disposal site, located in a dry southern climate where there is no freeze/thaw cycle that limits the life of concrete. The site should also be located on non-productive dry land in a low population zone to limit impacts from accidental contamination and public exposure. The modules would be placed in a matrix with about 20' separation (similar to the aging facility proposed for YMP). This spacing would allow room for monitoring, maintenance (if required), and on-site operations involving additional module emplacement and retrieval if needed. Also, the spacing would prevent a concentrated target for aircraft impact (although the modules have been shown to be safe from aircraft impact, see Refs. 1 and 2) or terrorist attack. The entire facility would be enclosed by a berm, 15' to 20' high. The berm would help protect the modules from aircraft crash and terrorist activities involving projectile attacks on the modules. On top of the berm would be a security fence with electronic surveillance equipment.

I have thought about a potential location for the repository. One good candidate would appear to be on or adjacent to Fort Bliss, the U.S. Army base in western Texas and southern New Mexico (North of El Paso). This site meets the criterion of low population, non-productive land, dry environment, and no freeze/thaw cycles. It has low seismic and volcanic potential. Fort Bliss is very large (1,700 mi.²) so that the required area (probably no more than a square mile) should be easily accommodated. The site would have ample rail access from the East, North, and West (rail access was a significant detriment at YMP). The government owns and controls the land, security support should be readily available from the base, there is restricted access, and the military presence would provide a detriment for terrorist attacks and malevolent intrusion (for the purpose of stealing the waste for extraction of weapons grade fissile material). Since Fort Bliss includes missile and artillery training, the storage modules could be readily tested at the base to verify resistance to aircraft crashes that produce missiles and potential

terrorist weapons attacks. If necessary, waste could be barged from the East to Corpus Cristi and then shipped by rail to the site.

The site could also accomodate military and defense waste, although there are some advantages in keeping them separate. For the military/defense waste, I would propose using the existing 5 mi. Tunnel at Yucca Mountain. Although I have not calculated the space required in detail, this tunnel should be ample to accomodate most, if not all, of the waste. The site already has an EIS and a License Application, both of which could be easily modified to include only military/defense waste. There should be less opposition to emplacement at YMP of this waste since most of it has decayed to low levels and it amounts to only about 10% of the nuclear power plant waste.

One objection to above ground dry storage would be the issue of leaving a situation that future generations have to deal with. This was an argument used to support geologic disposal at YMP. However, the amount of human attention required for this proposal is minimal. The concret/steel modules should last for many decades without replacement and the security force required should be minimal since access control is already provided by the military base. Further, it should be able to confirm that the site could be completely abandoned without significant detrimental effects after a few hundred years.

Respectfully Submitted.

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References:

1. Final Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear fuel and High Level Radioactive Waste at Yucca Mountain, Nye County Nevada, DOE, 2002
2. Safety Evaluation Report Concerning the Private Fuel Storage Facility, Sect. 15, Accident Analysis, Nov. 30, 2000.